

## **INTRODUCTION**

This annual air toxic report for 2002 was prepared by your San Joaquin Valley Air Pollution Control District. The District is a public health agency committed to improving the health and quality of life for all Valley residents through effective and cooperative air quality programs. This report describes the District's efforts and progress in addressing emissions of toxic air contaminants in the year 2002.

In response to public concern, both the California State Legislature and the United States Congress have passed laws providing for the regulation of emissions of toxic air contaminants. Under the District's integrated air toxics program, the District implements the requirements of these State and federal laws. Over the past several years, these efforts have resulted in significant reductions in Valley resident's exposure to toxic substances.

The California Air Resources Board and U.S. EPA have identified over 800 airborne substances that have the potential to adversely affect human health or the environment. Some of the substances listed by these agencies are considered to be carcinogens (cancer causing), while others are known to have adverse health effects other than cancer. The first part of this report provides information on emissions of hazardous air pollutants in the San Joaquin Valley. Hazardous air pollutants including combustion contaminants and other chemicals are emitted from mobile sources of air pollution, such as cars, trucks, and tractors; as well as from stationary sources of air pollution, such as factories and other businesses.

The second section of this report describes the District's progress in implementing a State law known as the Air Toxic "Hot Spots" Act Information and Assessment Act. This law requires the District to compile an inventory of toxic emissions from Valley facilities,

evaluate and assess the inventory for possible health risks facilities may pose on the general public, and notify those individuals who may be exposed to the assessed health risks. Although Hot Spots is primarily a public notification program, it has also resulted in reductions in toxic emissions at facilities determined to pose significant health risks to the public. In many instances, public awareness achieved through the Hot Spots program has led these businesses to voluntarily reduce their toxic emissions to ease community concerns.

Part III of this year's annual report addresses efforts to reduce risk due to diesel exhaust. In 1998, the California Air Resources Board (ARB) identified particulate matter emissions from diesel-fueled engines as a toxic air contaminant. Since that time, State, District and industry representatives have been working to implement uniform procedures for regulating these emissions.

Part IV of this report provides updated information on the District's implementation of the requirements from Title III of the 1990 Federal Clean Air Act Amendments. This change in federal law identified 189 substances as Hazardous Air Pollutants and required the U.S. EPA to establish a 10-year schedule for developing new regulations for controlling these pollutants using maximum achievable control technology. Under Title III, the U.S. EPA was also required to develop regulations to address urban area risk, residual risk, and accidental releases of Hazardous Air Pollutants. Many of these requirements are being implemented through the District's integrated air toxics program.

Part V of this report describes District efforts to minimize future increases in air toxic emissions. In order to ensure that the addition of new sources of air pollution does not create future air toxic "Hot Spots", the District reviews the risk associated with proposed permitting actions that could result in an increase in emissions of hazardous air

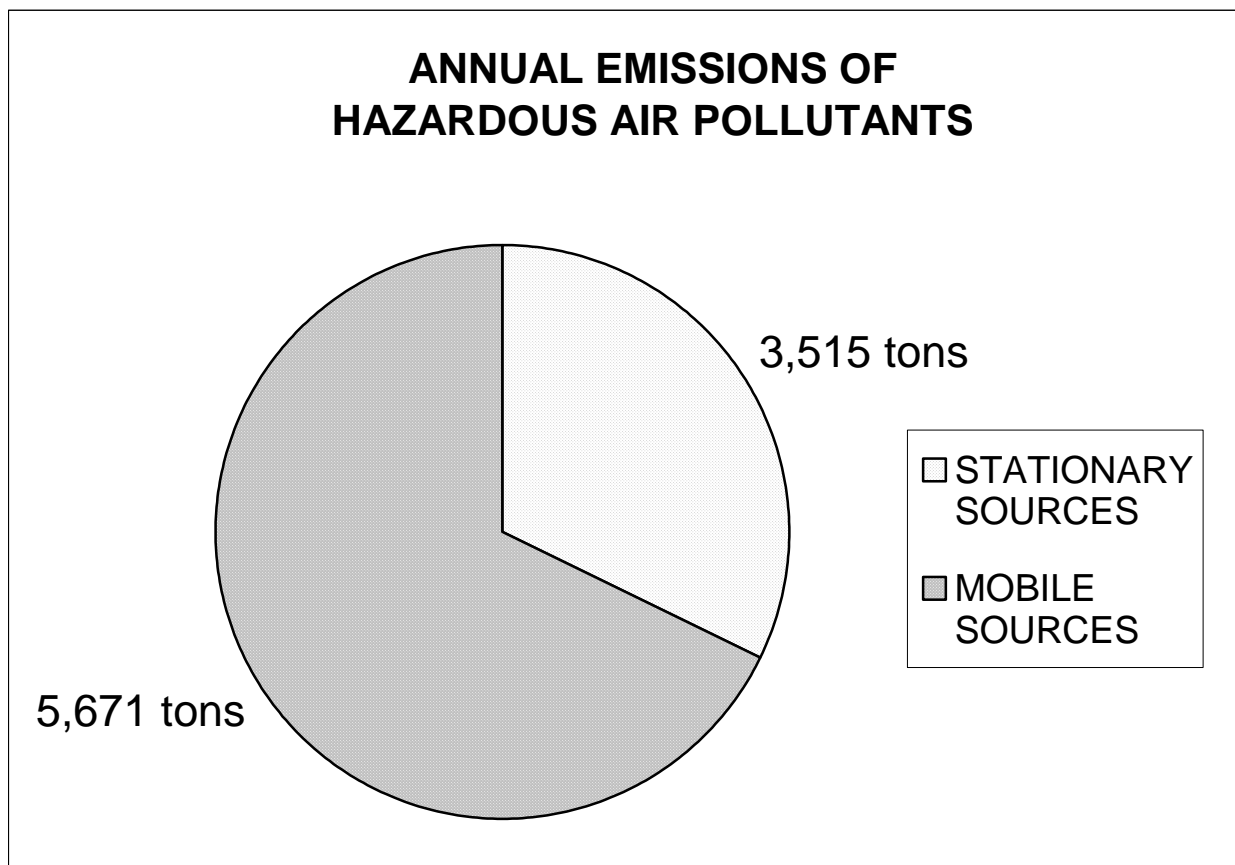
pollutants. This risk management review is performed as part of the District engineering evaluation of these projects.

The final section of this report addresses integrated air toxic program costs and fees. It includes a description of State and local activities funded by those fees, and describes District efforts to minimize program costs. The District's goal is to implement both State and federal air toxic requirements with a comprehensive, cost-effective local air toxics program.

## **I. EMISSIONS OF HAZARDOUS AIR POLLUTANTS**

Hazardous air pollutants are emitted both from mobile sources (i.e., cars, trucks, buses, tractors, etc), which are primarily regulated by the State and U.S.EPA; and from stationary sources, which are regulated by the District. As part of ongoing efforts to identify and assess potential health risks to the public, the District has compiled air toxics emissions data from industrial and commercial sources of air pollution. The State of California has developed similar hazardous air pollutant emission inventories for mobile sources of air pollution. These District and State inventories have been combined into the California Toxic Inventory (CTI), which provides emissions estimates for hazardous air pollutants of concern from all sources. A summary of these emissions estimates for the San Joaquin Valley is provided in Table A-1 in Appendix A. Figure 1 below shows a comparison of mobile and stationary source emissions of hazardous air pollutants in the San Joaquin Valley.

**Figure 1 – Comparison of Mobile and Stationary Source Emissions**



For many hazardous air pollutants, such as benzene, formaldehyde and diesel particulate matter, the vast majority of the emissions have been from mobile sources. For other hazardous air pollutants, including methylene chloride and perchloroethylene, emissions are primarily from stationary sources.

## **II. IMPLEMENTATION OF THE STATE AIR TOXICS “HOT SPOTS” ACT**

Significant reductions in the public’s exposure to hazardous air pollutants from stationary sources have been achieved since the District began implementing the State Hot Spots Act requirements. Public notifications that were required by the District’s Hot Spots program have been one motivating factor for these reductions. Of the 16 Valley

facilities that have been deemed to pose significant health risks under the Act, 14 have subsequently reduced those risks to a level no longer considered significant. Significant health risks due to hazardous air pollutant emissions from stationary sources that once impacted over 4,000 Valley residents have been eliminated.

### **Air Toxic Hot Spots Program Requirements**

The requirements of the Air Toxic "Hot Spots" Information and Assessment Act apply to facilities that use, produce, or emit toxic chemicals. Facilities that are subject to the toxic emission inventory requirements of the Act must prepare and submit toxic emission inventory plans and reports, and periodically update those reports.

### **Toxic Emission Inventory Plans**

Toxic Emission Inventory Plans provide a detailed description of the methods that will be used to quantify toxic air emissions. The District reviews each plan to assure compliance with the requirements of State regulations. By thoroughly reviewing each plan and identifying deficiencies prior to any source tests or engineering analysis, District personnel help regulated facilities avoid errors that can result in the need for costly and time-consuming rework. Most Valley facilities submitted toxic emission inventory plans during the early years of the program. In 2002, seven additional Toxic Emission Inventory Plans were approved.

### **Toxic Emission Inventory Reports**

Facilities are required by the Act to submit Toxic Emission Inventory Reports within 180 days after District approval of the Toxic Emission Inventory Plan. The District reviews these reports to assure compliance with the State regulations. Thirteen additional toxic emission inventory reports and 36 report updates were approved in 2002.

## **Industry-Wide Surveys**

Section 44323 of the California Health and Safety Code allows the District to perform industry-wide surveys for certain source categories. Sources participating in industry-wide surveys are exempt from the requirements to submit toxic emission inventory plans and reports. Industry-wide surveys provide a more streamlined and cost-effective method of preparing toxic inventories for certain source categories. In accordance with the Health and Safety Code, only those source categories meeting the following requirements are eligible to participate in industry-wide surveys:

1. Sources must have the same SIC code.
2. Individual compliance would result in severe economic hardships.
3. The majority of the class must be composed of small businesses.
4. Releases from the individual facilities must be easily and generically characterized.

Valley gasoline dispensing facilities (including bulk distributors of gasoline), dry cleaning operations, printing operations, and automotive painting facilities have been categorized as industry-wide survey facilities. Updated surveys for these facilities are being distributed in 2003.

## **Prioritization**

After the approval of a facility's Toxic Emission Inventory Report, the District is required to rank the health risk posed by the facility as "low", "medium", or "high" priority. Only those facilities ranked as high priority are required to perform health risk assessments. District personnel perform the prioritization using computerized spreadsheets and database programs. The following table summarizes the 15 prioritizations performed on Toxic Emission Inventory Reports in 2002:

**Table I - 2002 Prioritization Statistics**

Priority	High	Intermediate	Low
No. of Facilities	1	11	3

### **Health Risk Assessment**

The District and State Office of Environmental Health Hazard Assessment (OEHHA) are required by the Air Toxic "Hot Spots" Act to review each Health Risk Assessment. Based on the results of the risk assessment, facilities may be determined to pose a significant risk. The District requires high priority facilities to submit risk assessment protocols for District approval prior to performance of the Health Risk Assessment.

Health Risk Assessments are performed using CARB approved methods and software. The first step in District review of risk assessments is to validate all input data. Valid input data for atmospheric modeling includes facility and emission data from approved reports and meteorological data. Once the input data has been validated, District personnel attempt to reproduce the results of the atmospheric modeling and risk assessment. Any discrepancies between the facility's risk assessment results and the District's results must be resolved.

Risk calculation involves a great deal of uncertainty. The uncertainty arises from lack of data in many areas necessitating the use of assumptions. The assumptions used are designed to err on the side of health protection in order to avoid underestimating the risk to the public. The actual risk may be much less than the calculated risk.

The District approved one additional health risk assessment in 2002. The determination based on this Health Risk Assessment is given in Table II.

**Table II - Health Risk Assessments Approved in 2002**

<b>Facility Name</b>	<b>Location</b>	<b>Risk Determination</b>
City of Turlock – Water Quality Control	Turlock	Not a Significant Risk Facility

### **Risk Reduction Audits and Plans**

Facilities that pose health risks above District action levels are required to submit plans to reduce their risk. Action levels for risk were established in the District's Board-Approved Risk Reduction policy. The action level for cancer risk is 100 cases per million exposed persons, based on the maximum exposure beyond facility boundaries at a residence or business. The action level for non-cancer risk is a hazard index of five at any point beyond the facility boundary where a person could reasonably experience exposure to such a risk. There are currently no Valley facilities that have been determined to pose risks in excess of action levels.

### **III. ADDRESSING RISK DUE TO DIESEL EXHAUST**

In August of 1998, following an exhaustive 10-year scientific investigation, the California Air Resources Board identified particulate matter emissions from diesel-fueled engines as a toxic air contaminant with the potential to pose a significant cancer risk to the public. In the analysis prepared for this determination, the ARB estimated the cancer risk from the exhaust of diesel internal combustion engines to be over 500 cancer cases per million, which is far higher than the estimated cancer risk from all other sources of air pollution combined. Because of the extremely high level of risk associated with diesel exhaust, and because of the prevalence of the engines, the State chose not to address diesel exhaust using the existing risk management



guidance. Instead, they chose to establish an advisory committee of interested parties, and develop a comprehensive risk management plan that would result in significant reductions in emissions of diesel particulate matter.

Although the vast majority of diesel engines are associated with mobile sources of air pollution (trucks, locomotives, tractors, etc.) regulated by the State, many industrial and commercial operations also use stationary and transportable diesel engines that are subject to District permitting requirement. Under the District's Risk Management Policy for New and Modified Sources, Toxic Best Available Control Technology (TBACT) is required for emission units that pose a "greater than de minimus" increase in risk. However, before the requirements of this policy could be implemented for diesel engines, TBACT still had to be determined. This TBACT determination came in October of 2000, when the ARB approved the Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines, which was developed by the Statewide advisory committee of interested parties. In approving the guidance, the State Board found that catalyzed diesel particulate filters, which have been used successfully for a wide variety of applications, are TBACT for stationary non-emergency engines, and that an emission rate of 0.149 grams per Horsepower-hour or less is TBACT for emergency engines.

The District began implementing the State guidance for stationary diesel engines in March of 2001. Since that time, the District has approved several hundred proposals for new cleaner engines meeting these TBACT requirements.

During 2002, the District has also began collecting and reviewing diesel emissions and risk data in update reports prepared for stationary sources under the State Air Toxics Hot Spots Program.

#### **IV. IMPLEMENTATION OF FEDERAL AIR TOXIC MANDATES**

Title III of the 1990 Federal Clean Air Act Amendments rewrote Section 112 of the Act requiring the EPA to embark on a ten-year effort to develop detailed technology-based standards for 189 hazardous air pollutants. These new federal Maximum Achievable Control Technology (MACT) Standards affect over 70 source categories, many of which are already subject to State regulation. Other Title III mandates, such as the preconstruction review requirements of Section 112(g) of the Act, may also duplicate existing State and local requirements.

Under the District's Integrated Air Toxic Program and federal regulations, there are several options for implementing new technology-based federal standards:

- 1) Straight Delegation -- Accepting delegation of the federal standard as written;
- 2) Rule Adjustment -- Proposing minor changes to the federal MACT rule that make the adjusted rule no less stringent than the federal standard;
- 3) Rule Substitution -- Substituting one or more existing, new, or amended District rules for the federal standard;
- 4) Streamlining Multiple Applicable Requirements -- Minimizing duplicative requirements by placing the more stringent emission limit or workplace practice standard on the permit along with the corresponding monitoring, recordkeeping, and reporting requirements.
- 5) Program Substitution -- Using existing programs to assure compliance with the requirements of federal standards.

The District must choose the most appropriate option for implementing each federal standard. Two series of public workshops have been held to obtain public input on

the implementation of federal standards. For the standards issued prior to 2002, the District chose to proceed with the following implementation options:

### **Options chosen for Implementing MACT Standards**

<b><u>40 CFR 63</u></b>	<b><u>Source Category</u></b>	<b><u>Option</u></b>
Subpart F-I	Synthetic Organic Chemical Mfg. (HON)	Straight Delegation
Subpart L	Coke Oven Batteries	Straight Delegation
Subpart M	Dry Cleaning	Rule Substitution
Subpart N	Chromium Electroplating and Anodizing	Rule Substitution
Subpart O	Ethylene Oxide Sterilization Facilities	Straight Delegation
Subpart Q	Industrial Process Cooling Towers	Straight Delegation
Subpart R	Gasoline Distribution	Streamlining MAR
Subpart S	Pulp and Paper Industry	Straight Delegation
Subpart T	Halogenated Solvent Cleaning	Rule Substitution
Subpart U	Group I Polymers and Resins	Straight Delegation
Subpart W	Epoxy Resins and Non-Nylon Polyamides	Straight Delegation
Subpart X	Secondary Lead Smelting	Straight Delegation
Subpart Y	Marine Tank Vessel Loading Operations	Straight Delegation
Subpart U	Group I Polymers and Resins	Straight Delegation
Subpart AA	Phosphoric Acid Manufacturing Plants	Straight Delegation
Subpart BB	Phosphate Fertilizer Production Plants	Straight Delegation
Subpart CC	Petroleum Refineries	Streamlining MAR
Subpart DD	Off-Site Waste and Recovery Operations	Streamlining MAR
Subpart EE	Magnetic Tape Manufacturing	Straight Delegation
Subpart GG	Aerospace Manufacturing and Rework	Straight Delegation
Subpart HH	Oil and Natural Gas Production Facilities	Streamlining MAR
Subpart II	Shipbuilding and Repair (Surface Coating)	Straight Delegation
Subpart JJ	Wood Furniture Manufacturing	Straight Delegation
Subpart KK	Printing and Publishing Industry	Straight Delegation
Subpart LL	Primary Aluminum Reduction Plants	Straight Delegation
Subpart YY	Generic MACT	Straight Delegation
Subpart CCC	Steel Pickling	Straight Delegation
Subpart DDD	Mineral Wool Production	Straight Delegation
Subpart GGG	Pharmaceutical Production	Straight Delegation
Subpart HHH	Natural Gas Transmission and Storage	Streamlining MRR
Subpart III	Flexible Polyurethane Foam Production	Streamlining MRR
Subpart JJJ	Group IV Polymers and Resins	Straight Delegation
Subpart LLL	Portland Cement Manufacturing	Straight Delegation
Subpart MMM	Pesticide Active Ingredient Manufacturing	Straight Delegation
Subpart NNN	Wool Fiberglass Manufacturing	Streamlining MRR
Subpart OOO	Manufacture of Amino/Phenolic Resins	Straight Delegation
Subpart PPP	Polyether Polyol Production	Straight Delegation
Subpart RRR	Secondary Aluminum Production	Straight Delegation
Subpart TTT	Primary Lead Smelting	Straight Delegation
Subpart VVV	Publicly Owned Treatment Works	Straight Delegation
Subpart XXX	Ferroalloys Production	Straight Delegation

Since the last District Workshops, through the end of calendar 2002, U.S. EPA has promulgated additional MACT standards :

Subpart VVVV	Boat Manufacturing
Subpart CCCC	Manufacturing Nutritional Yeast
Subpart GGGG	Solvent Extraction of Vegetable Oil
Subpart UUUU	Cellulose Production Manufacturing
Subpart QQQQ	Friction Products Manufacturing
Subpart NNNN	Large Appliances Surface Coating
Subpart TTTT	Leather Finishing
Subpart SSSS	Metal Coil Surface Coating
Subpart UUU	Petroleum Refining – Cracking, Reforming and Sulfur Plants
Subpart J	PVC and Copolymer Production
Subpart JJJJ	Paper and Other Web Coating
Subpart XXXX	Tire Manufacturing

The District will hold public workshops in 2003 to obtain public input on the implementation of these additional federal MACT standards.

## **V. RISK MANAGEMENT ACTIVITIES**

The goals of District risk management efforts are to: 1) minimize increases in toxic emissions associated with new and modified sources of air pollution; and 2) ensure that new and modified sources of air pollution do not pose unacceptable health risks at nearby residences and businesses. In order to achieve these goals, the District reviews the risk associated with permitting actions where there is an increase in emissions of hazardous air pollutants. This risk management review is performed by District staff as part of the engineering evaluation for these projects. Since risk management review is performed concurrently with other project review functions using streamlined procedures, the process does not extend the length of time necessary to process applications.

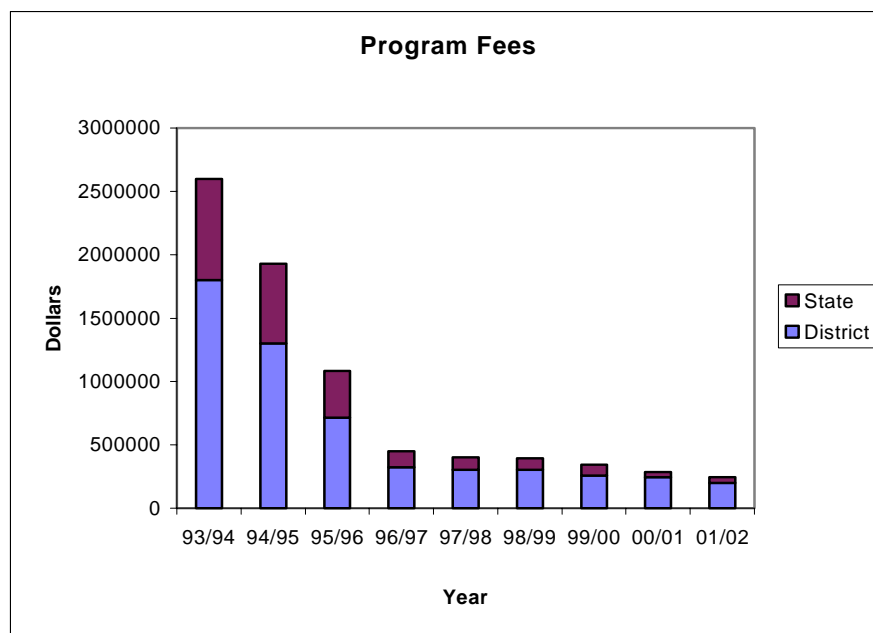
Under the District's risk management policy, Toxic Best Available Control Technology must be applied to all units that, based on their potential emissions, may

pose greater than de minimus risks. Projects that would pose significant health risks at nearby residences or businesses are generally not approvable.

During 2002, District staff performed risk management reviews for over 500 projects with increases in hazardous air pollutants. For each project where the proposal was determined to pose a significant health risk, District staff worked with facility operators to develop low risk alternatives to their original proposal.

## VI. PROGRAM COSTS AND FEES

During 2002, District progress in making air toxic efforts more cost effective continued. Both District and State program costs for the 2001/02 fiscal year were reduced from previous years. These further reductions were made possible by efforts to identify and exempt facilities that could not be expected to pose a health risk to the public and other program streamlining measures. These cost reductions, which were achieved in spite of increases in federal program requirements, translate directly into lower overall fees charged to Valley facilities. The following graph shows the reduction in District air toxic program costs that has been realized in the past eight fiscal years.



The fees collected support the following activities that CARB, OEHHA, and the District must undertake to administer the Air Toxics "Hot Spots" Program:

**Activities by California Air Resources Board Supported by Air Toxics Fees**

1. Review potential additions to the toxics substances list;
2. Develop source test methods;
3. Assist districts in implementing the guideline regulations;
4. Update risk assessment procedures;
5. Assist districts in ranking facilities;
6. Assist facility operators in preparing protocols and risk assessments;
7. Assist districts in reviewing risk assessments and protocols;
8. Assist districts in the development of public notification procedures;
9. Manage the statewide "Hot Spots" data.

**District Activities Supported by Air Toxics Fees**

1. Review of toxic emission inventory plans and reports;
2. Review of updates;
3. Rank facilities for health risk assessment;
4. Review and approve risk assessments;
5. Participate in notification process;
6. Perform budgeting and billing functions;
7. Prepare public reports;
8. Review of applications for new and modified sources of air toxics;
9. Risk Management Review
10. Title III Implementation Activities

### **OEHHA Activities Supported by Air Toxics Fees**

1. Assist CARB with updating and reviewing toxic substance list;
2. Assist CARB with implementation of Guideline Regulations;
3. Assist District in ranking facilities for risk assessment;
4. Assist facility operators in preparing risk assessments;
5. Review risk assessments (additional hourly charge);
6. Assist districts in the development of notification procedures;
7. Assist districts with public notification;
8. Update risk assessment procedures;
9. Develop a health effects database;
10. Develop health risk values.

## **Appendix A**

### **Emissions of Hazardous Air Pollutants in the San Joaquin Valley**



**Table A-1**  
**San Joaquin Valley Hazardous Air Pollutant Emissions<sup>1</sup>**

<b>Pollutant</b>	<b>Emissions (tons per year)</b>
Diesel Particulate Matter	4,643
Formaldehyde	3,836
Benzene	3,039
Acetaldehyde	1,285
1,3-Butadiene	668
Perchloroethylene	469
Methylene chloride	390
Acrolein	241
Styrene	185
p-Dichlorobenzene	144
Chromium	62
Nickel	36
Lead	9.9
Manganese	9.6
Arsenic	9.2
PAHs	5.3
Chloroform	2.6
Trichloroethylene	1.9
Cadmium	1.5
Mercury	1.3
Hexavalent Chromium	0.61
Ethylene oxide	0.16
Ethylene dibromide	0.13
Ethylene dichloride	0.13
Beryllium	0.076
Vinyl chloride	0.075
Carbon tetrachloride	0.027
Acrylonitrile	0.0048
Hydrazine	0.0012
Dioxins/Benzofurans	0.00002
Hexachlorobenzene	0.00001

<sup>1</sup> Emissions for eight counties of San Joaquin Valley from California Air Resources Board California Toxic Inventory (CTI). Data for CTI was obtained from a variety of District and State sources.